DOCUMENT RESUME

ED 051 791 HE 002 405

| | |
|---|---|
| AUTHOR | Williams, Robert L. |
| TITLE | The Faculty Work Load -- Alternate Methods of Evaluation. |
| INSTITUTION | Education Commission of the States, Denver, Colo. |
| REPORT NO | R-19 |
| PUB DATE | Dec 70 |
| NOTE | 26p. |
| EDRS PRICE | EDRS Price MF-$0.65 HC-$3.29 |
| DESCRIPTORS | *College Faculty, *Evaluation, *Faculty, Higher Education, Research, Teaching, *Teaching Load, *Working Hours |

ABSTRACT

This paper is primarily based upon an analysis of faculty workload at several midwestern universities. A faculty member's total workload consists of three different assignments: teaching, research, and public service. The average faculty member spends from 50 to 55 hours each week in these pursuits. The time spent in teaching is usually expressed in terms of contact hours and credit hours which, in turn, are controlled by three factors: (1) the class level of the student; (2) the accustomed or accepted methods of teaching; and (3) the nature of the subject matter. In addition, in assessing teaching loads it is also necessary to have information on: (1) the number of contact hours per week taught in each school according to the academic trade of the faculty member; and (2) the teaching load based on the full-time equivalent faculty position. The teaching load of the research professor should be assessed on an individual basis. Other measures used in consideration of faculty workload discussed in this paper are: teacher-student ratio, class size, and student credit hours per full-time equivalent faculty. (AF)

ED051791

# THE FACULTY WORK LOAD --

# ALTERNATE METHODS OF EVALUATION

by

Robert L. Williams

Report No. 19

Education Commission of the States

Denver, Colorado

December, 1970

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

HE 002 405

The Faculty Work Load -- Alternate Methods of Evaluation was written for the Advisory Committee on Higher Education of the Midwestern Conference of the Council of State Goverments. Dr. Robert L. Williams, the author, is administrative dean of the University of Michigan and a member of the Advisory Committee.

As part of its continuing effort to provide educational policy-makers with background material, the Education Commission of the States is pleased to distribute the report of Dr. Williams to interested political and educational leaders. The paper is primarily based upon an analysis of faculty work load at several midwestern universities. It provides, however, basic factual information and indicates a widely held point of view to those concerned with the specific problems related to measuring use of faculty resources.

ED051791

# THE FACULTY WORK LOAD

## ALTERNATE METHODS OF EVALUATION

By Robert L. Williams
Administrative Dean
University of Michigan

November 1970

CONTENTS


| | Page |
|---|---|
| The Faculty Member's Total Work Load | 1 |
| Research | 2 |
| Public Service | 2 |
| Teaching | 3 |
| The Teaching Load of the Research Professor | 8 |
| Teacher-Student Ratio | 10 |
| Class Size | 16 |
| Student Credit Hours Per F.T.E. Faculty | 18 |
| Summary | 19 |


Note: Tabular material in this report is excerpted from The Administration of Academic Affairs in Higher Education, by Robert L. Williams (University of Michigan Press: 1965), pp. 82-101.

The amount of time a faculty member spends actually teaching classes is only a small portion of his total work week. The work load of the American professor is made up of three different assignments: teaching, research, and public service.

## The Faculty Member's Total Work Load

According to reports from faculty members, on a nation-wide basis, the typical faculty member spends an average of 50-55 hours each week in his total work load of teaching, research, and public service.

Other analyses indicate that the professor spends approximately one-half of his time on direct instructional activities in the classroom plus related preparation, counseling, paper grading, and the like; with one-fourth time being devoted to research; and one-fourth time spent on public service, including university administration. The typical weekly work load of a faculty member would be some twenty-six to twenty-eight hours a week in instructional and instruction-related activities, thirteen or fourteen hours weekly on administration and public service. These generalizations, however, must be regarded as averages. There are some weeks in which instructional activities may not require as much time -- i.e., the fall registration or enrollment period, the examination period, and so on. During these weeks, the professor utilizes his time more on research and public service, and other times of the year he unquestionably has additional pressure on his instructional activities which means he must spend less time on his research and public service activities.

It is all well and good for the faculty member to state that he spends about one-half time on instruction, about one-fourth time on research, and another quarter time on public service. The taxpayer, however, might well ask, "Is it necessary for him to spend one-half of his time on non-teaching activities? Why not give up the research and public service function and thereby enable him to teach twice as much as he now does?" This would have the effect of reducing the size of our faculty by 50 percent, salaries could be raised, and the burden on the state and national economy would be lessened by far.

It is true that economies of this type could be made within the college and university budget. The cost of such savings, however, would be so great in other areas that society's progress in technical know-how would come to a virtual standstill. Our application of existing knowledge would be curtailed because of the lack of time to place this knowledge into effect. It would be impossible for the gross national product to continue its present rates of upward increase year by year.

## Research

The "knowledge explosion" can be illustrated in several ways. Today's leading physicians attest to the fact that 90 percent of the commonly used drugs of today were not known ten years ago. In 1960 when President John F. Kennedy first announced his goal of landing a man on the moon by 1970, the technology required to achieve this objective did not exist, and yet it was realized within a period of some nine years.

Explosions of this sort do not occur on a chance basis or without cause. The development of knowledge is attributable almost exclusively to research or the skills of inquiry.

Research laboratories are maintained by many large corporations. The Bell Laboratories of the American Telephone Company and the research labs of Ford, General Motors, and Chrysler are illustrative of research in industry.

College faculty members are also expected to engage in productive research. Their professional promotion depends to a large part -- many people say too large a part -- on the amount of new knowledge they contribute to their professional field. The development of new knowledge through research occurs throughout the spectrum of today's college and university activities.

Many of the research break-throughs that occur each year are developed in university research laboratories. The discovery of aluminum years ago occurred in the chemical laboratories of Oberlin College. The "heart pump" is another research contribution from a medical clinical laboratory in a teaching hospital. Vitamin B-12 was another research contribution from a botany laboratory. The newer methodologies in agriculture, propogation of new types of plants, fertilizers, and other factors affecting the tremendous development of our agricultural economy now permit only a fraction of the number of individuals engaged in agricultural production years ago to produce several times as many agricultural products as produced at that time.

Productivity is the keynote to the modern American standard of living. Any de-emphasis that would cause productivity to remain on a plateau, much less recede, would inhibit the growth of the gross national product with a disastrous effect upon our national economic well-being.

## Public Service

The public service function of the faculty member can be explained simply -- the utilization of knowledge which has been developed through the research and inquiry activities of the teacher. In some cases this takes quite obvious forms, i.e., the professor of political science who assists the county board of supervisors or the city board of alderman in arriving at solutions to ever-present governmental problems. The medical researcher who applies new knowledge discovered in clinical laboratories to the development of new treatments for the ill, aged, and infirm offers another illustration.

There is virtually no limit to the application of new knowledge. It might seem that the connection between agricultural research and the newer knowledge about atomic energy would be hard to illustrate. Nevertheless, through the use of radioactive isotopes one can actually conduct experimentation in the values of different types of fertilizer through tracing the spread of the life-giving food through the stalk and structure of the plant using Geiger counters and other simple measures of this type. This has enabled the agriculturalist to develop the most efficient type of fertilizer known.

The development of university laboratory procedures which enables modern foundries to pour castings within a tolerance of 1/32 of an inch has saved millions of dollars annually to the metal industry.

The teacher trainer interested in the learning process is constantly developing improved methodology for use in the public school classrooms which makes it possible for public school students to learn more effectively and economically.

Further illustrations are available in bringing knowledge, acquired by research, to bear on urban problems and resources, air and water pollution, highways including highway safety, and so on. As a matter of fact, there is no area of human endeavor which is not subject to change and consequent improvement from the application of research knowledge.

## Teaching

Since teaching is a more visible activity and therefore more evident to the general public than other faculty functions, we have allowed the opinion to develop that time spent in teaching is a reliable measure of a faculty member's total work load.

The general impression is that a faculty member meets classes twelve hours and can use the rest of his time as he likes. If we must emphasize the amount of teaching before a formal class as the chief measure of the faculty's contribution to an institution, it would seem appropriate that we also point out the time required for corollary services, particularly preparation for class and postclass activities, such as paper-grading and report-making.

The terms most commonly used in expressing the amount of formal teaching are "Contact Hours" or "Credit Hours" which are defined as follows:

Contact Hours. The actual number of hours each week that a faculty member spends in the classroom with students in a teaching situation.

Credit Hours. The total number of credit hours of teaching are derived by adding the number of hours of credit of the courses a faculty member teaches in any one semester or term. Example: A faculty member teaches a freshman

course with four hours of credit; a course for juniors-seniors with three hours of credit; and a graduate course with three hours credit, to give a total of ten credit hours of teaching.

The amount of formal teaching, measured in either contact hours or credit hours of teaching, which should be considered a "normal" assignment is controlled by three factors: (1) The class level of the students. Are the students in the class freshmen, as they would be in a course like English composition, or are they perhaps senior students in medicine, or candidates for the Ph.D. in the last semester of work? Variations in teaching procedures affecting the full-time teaching assignment must vary in each of these situations. (2) The accustomed or accepted methods of teaching. Classes in the Law School, for instance, commonly number three or four times more students than is generally regarded as being proper for classes in English composition, mathematics, or other disciplines. (3) The nature of the subject matter. Instruction through private music lessons requires one student for one teacher for a period lasting one hour. Classes in conversational French must be limited to eight or ten students, if an atmosphere is to be created in which conversation occurs spontaneously.

The scope of subject matter in the modern university requires instruction ranging from the individual lesson in applied music, through semi-individual instruction, as in the fourth or fifth year of professional architecture programs or the dental clinic, and finally up to student classes of one hundred or more, as in Law and other programs.

Many faculty members spend perhaps as much time in informal teaching as they do standing before a class. Office hours, individual conferences, sessions with candidates preparing dissertations, supervision of advanced student research, membership on doctoral committees, and the like are modes of instruction just as important as the more formal teaching. In the long run, such activities may contribute even more to learning than the more strictly organized teaching methods.

In short, there can be no standard "teaching load" for an entire university. The maximum amount of time that any one faculty member can give to his instructional duties is subject to too many variations in subject matter, methods of teaching, class level, class size, and other controlling factors.

As an illustration, the teaching load in freshman composition is frequently expressed as nine contact and credit hours a week, or three classes, each meeting three times a week and having an enrollment of somewhere between twenty-five and thirty students. This seems to be a very light teaching schedule until one recognizes that the teacher is required to exact one five-hundred word theme from each of his students each week and to grade these themes personally without aid from readers or other assistants. In addition, departmental regulations require the teacher to have a twenty-minute private conference every two weeks with each student, during which the instructor reviews the student's progress in the class and particularly

analyzes the skill in writing he has shown in his last two themes. Although all these activities are part of the teaching process, frequently the teaching load in this situation is described as nine hours, which is in reality only the time spent in organized classes.

In contrast, teachers of applied music (private lessions) frequently regard twenty-five hours of such work each week as the standard teaching load. Senior professors in the professional program in architecture may teach eighteen to twenty-four hours each week. It would seem on the surface that the teacher of English who spends nine classroom hours in freshman composition classes, as opposed to the twenty-four hour assignment in a professional architecture program or the twenty-five hours devoted to private music lessons, has a very easy schedule, so easy that it can hardly be justified by the university. As we have seen, however, the entire teaching process must be considered before such a generalization could be accepted.

In the complex university, however, much of the teaching cannot be measured in terms of the clock-hours of teaching or semester credit hours for courses offered by the teacher. A graduate student receives ten semester hours of credit for his dissertation, and the professor who directs the thesis may regard the work as ten semester hours of teaching. Are these ten hours of credit comparable to teaching two classes which meet five hours a week and have an enrollment of thirty students each? The answer depends upon the actual procedure used. If the teacher meets alone with one Ph.D. candidate five hours a week in a research program yielding five credit hours, this should be recognized as five credit hours produced. If he sees the Ph.D. candidate occasionally at irregular times the advice and counseling procedures are usually quite different and are not regarded as a full five hours within the faculty member's teaching load. The problem is even more difficult in the older institutions which have offered graduate instruction for a century or more and do not officially record any semester-hour value for thesis preparation or the other advanced research involved in the doctoral degree program.

Among the types of management data needed in assessing teaching loads are:

1. The number of contact hours per week taught in each school and college, according to the academic grade of the faculty member: professor, assistant professor, instructor, lecturer, or teaching fellow. (See Table 1.)

2. The teaching load based on full-time equivalent faculty positions. The number of "full-time equivalent" faculty positions is derived by adding together all full-time positions, plus the fractional appointment values of all part-time positions. Thus, in essence, two one-half time positions would equal one "full-time equivalent" position; or a one-third time position plus a two-thirds time position would equal one "full-time equivalent" or one F.T.E. (See Table 2.)

Table 1

Contact Teaching Hours by Academic Grade in
All Schools and Colleges, Fall Semester

| School or College | Total Hours Taught | Percent Taught By | | | | |
|---|---|---|---|---|---|---|
| | | Prof. | Assoc. Prof. | Asst. Prof. | Instr. | Lecturer and Teaching Fellow |
| A | 1,108 | 27.71 | 29.78 | 16.43 | 10.38 | 15.70 |
| B | 451 | 37.47 | 19.07 | 14.64 | 9.09 | 19.73 |
| C | 285 | 2.81 | 18.25 | 21.75 | 20.70 | 36.49 |
| D | 1,492 | 29.83 | 17.49 | 14.28 | 15.08 | 23.32 |
| E | 476 | 47.90 | 17.23 | 16.81 | 7.56 | 10.50 |
| F | 3,027 | 33.20 | 20.61 | 16.06 | 11.99 | 18.14 |
| G | 242 | 14.88 | 41.73 | 27.27 | - | 16.12 |
| H | 251 | 66.14 | 10.35 | 11.56 | 11.95 | - |
| I | 9,524 | 21.18 | 12.11 | 11.88 | 9.62 | 45.21 |
| J | 1,273 | 26.55 | 21.84 | 19.01 | 1.10 | 31.50 |
| K | 308 | 44.48 | 31.17 | 15.26 | - | 9.09 |
| L | 783 | 0.77 | 6.13 | 27.84 | 52.23 | 13.03 |
| M | 158 | 36.08 | 35.44 | 27.21 | - | 1.27 |
| N | 444 | - | 20.05 | 15.99 | 29.95 | 34.01 |
| O | 362 | 33.70 | 28.73 | 24.03 | 1.38 | 12.16 |
| P | 276 | 31.16 | 22.83 | 30.80 | - | 15.21 |
| Total Hours | 20,460 | 5,137 | 3,449 | 3,108 | 2,346 | 6,420 |
| % of Total | 100.00 | 25.11 | 16.86 | 15.19 | 11.46 | 31.38 |

Table 2

Average Teaching Load Based on Full-Time Equivalent Faculty Positions

| School or College | Professor Average - 10.84 Total Contact Hours | Full-Time Equivalent | Average Contact Hrs per F.T.E.* | Associate Professor Average - 12.12 Total Contact Hours | Full-Time Equivalent | Average Contact Hrs per F.T.E.* |
|---|---|---|---|---|---|---|
| A | 307 | 18.17 | 16.90 | 330 | 22.10 | 14.93 |
| B | 169 | 24.27 | 6.96 | 86 | 12.17 | 7.07 |
| C | 8 | .99 | 8.08 | 52 | 6.83 | 7.61 |
| D | 455 | 20.10 | 22.64 | 261 | 10.65 | 24.51 |
| E | 228 | 17.43 | 13.08 | 82 | 7.16 | 11.45 |
| F | 1,005 | 89.95 | 11.17 | 624 | 55.31 | 11.28 |
| G | 36 | 4.00 | 9.00 | 101 | 8.00 | 12.62 |
| H | 166 | 22.95 | 7.23 | 26 | 4.00 | 6.50 |
| I | 2,017 | 210.57 | 9.58 | 1,153 | 110.80 | 10.41 |
| J | 338 | 24.25 | 13.94 | 278 | 16.00 | 17.38 |
| K | 137 | 11.00 | 12.45 | 96 | 7.00 | 13.71 |
| L | 6 | .61 | 9.84 | 48 | 3.00 | 16.00 |
| M | 57 | 3.00 | 19.00 | 56 | 2.00 | 28.00 |
| N | - | 2.67 | - | 89 | 8.08 | 11.01 |
| O | 122 | 15.63 | 7.81 | 104 | 8.25 | 12.61 |
| P | 86 | 8.25 | 10.42 | 63 | 3.25 | 19.38 |
| Total | 5,137 | 473.84 | 10.84 | 3,449 | 284.60 | 12.12 |

| School or College | Assistant Professor Average - 12.02 Total Contact Hours | Full-Time Equivalent | Average Contact Hrs per F.T.E.* | Instructor Average - 13.19 Total Contact Hours | Full-Time Equivalent | Average Contact Hrs per F.T.E.* |
|---|---|---|---|---|---|---|
| A | 182 | 11.75 | 15.49 | 115 | 7.00 | 16.43 |
| B | 66 | 8.00 | 8.25 | 41 | 4.50 | 9.11 |
| C | 62 | 6.75 | 9.18 | 59 | 5.94 | 9.93 |
| D | 213 | 7.35 | 28.98 | 225 | 6.30 | 35.71 |
| E | 80 | 9.17 | 8.72 | 36 | 4.25 | 8.47 |
| F | 486 | 39.63 | 12.26 | 363 | 26.97 | 13.46 |
| G | 66 | 8.00 | 8.25 | - | - | - |
| H | 29 | 4.77 | 6.08 | 30 | 5.00 | 6.00 |
| I | 1,131 | 117.17 | 9.65 | 916 | 87.47 | 10.33 |
| J | 242 | 15.37 | 15.74 | 14 | 1.00 | 14.00 |
| K | 47 | 2.00 | 23.50 | - | - | - |
| L | 218 | 14.58 | 14.95 | 409 | 18.03 | 22.68 |
| M | 43 | 2.28 | 18.86 | - | - | - |
| N | 71 | 6.59 | 10.77 | 133 | 10.01 | 13.29 |
| O | 87 | 4.00 | 21.75 | 5 | 1.42 | 3.52 |
| P | 85 | 1.25 | 68.00 | - | - | - |
| Total | 3,108 | 258.66 | 12.02 | 2,346 | 177.89 | 13.19 |

*F.T.E. = Full-Time Equivalent

It is clear that a standard teaching load cannot be defined in a given institution due to the wide variations in subject matter, accepted methodology of teaching, laboratory versus lecture-type instruction, and other variables.

The statement that each department must assign teaching loads based on these variables does not mean that the department possesses freedom to act in an irresponsible fashion by assigning very low or limited teaching loads to all members of its staff, thus making larger budgetary claims upon the institution than other departments which assign heavier teaching loads to its staff members.

College faculties never have available the amount of money they requested or that they actually need. Consequently, efficiency is a highly sought objective in departmental administration. Since all members of a department know about the teaching load of other individuals, inequities of the type suggested would soon lead to departmental discussions of these matters which would eliminate them.

Furthermore, the dean should, in making budgetary allocations to the several departments within his jurisdiction, have complete records regarding teaching loads, credit hours produced, and other pertinent management data available to him as he allocates funds to the department for the operations of the year.

## The Teaching Load of the Research Professor

Some institutions have used the title "research professor" as the designation for an individual extremely gifted in research who is expected to do little or no teaching. Other institutions while not using the title "research professor" follow the practice of allowing such individuals to engage in what appears to be a very light teaching load.

Naturally, members of the legislature, state budget officers, and other concerned agencies wonder why such individuals are not expected to carry a normal teaching load, especially when salaries paid such individuals are provided from state funds.

One explanation is that the education of graduate students and faculty research efforts are inseparable. Graduate instructional programs of quality cannot be maintained without an extensive research program. Faculty research can rarely be carried on without close relationship to the graduate educational program. If the research professor has only one class which meets formally three hours each week, it may appear that his teaching load is only three hours a week. If, on the other hand, he has some eight or ten graduate students assigned to him as research assistants, it is clear that he is providing them training in research methodology which will result in semester credit hours on the student's record applicable toward the advanced degree being sought.

The supervision of eight or ten graduate student research assistants working on their dissertations is generally regarded as a full-time teaching load without participation in any classes that meet at scheduled times.

If the research professor is supported by outside funds, and these outside funds are withdrawn, what obligation does the institution have to continue the research professorship? This is a real question in inequities which should be faced fairly. While the concept of faculty tenure is not within the province of this paper, it is clear that this type of research professorship should not gain tenure, and consequently the institution would have no obligation to continue this position. If a vacancy existed in the department concerned, and if the individual fitted into the departmental needs and was prepared to teach a normal load according to departmental standards, he could be transferred from outside funds to state funds and carried on the departmental roll.

The bylaws of one university deal with this difficult point by stating:

> Appointments to positions paid in whole or in part from grants or contracts for limited periods of time shall be subject to the following provisions in the event of cessation of these funds:
>
> a. In case of persons previously holding full- or part-time positions paid from general university funds, the person shall be restored to his appointment status within the department, either with tenure or without, for the remainder of the term of appointment, at the appropriate departmental salary.
>
> b. In case of persons brought to the university for the performance of duties payable from limited term funds, both service and salary shall be terminated.
>
> Nothing in these regulations shall prohibit the department from recommending a new appointee to a tenure grade within a faculty and assigning him immediately to duties payable from limited term funds. When the limited term funds are no longer available, the department concerned will be responsible for providing further tenure of duties and salary.

3. The total faculty function of (1) teaching and administration, (2) research, (3) public service should be described adequately. These summary data can be broken down by school, college, and departments. There is no reason to suggest that the expenditure of time by function should be the same for each instructional unit or each academic grade. (See Table 3.)

Table 3

Average Number of Hours per Week Spent by Typical Full-Time Equivalent Faculty Member, by Rank

| Type of Activity | Average Number of Hours Per Week | | | | | | |
|---|---|---|---|---|---|---|---|
| | Prof. | Assoc. Prof. | Asst. Prof. | Instr. | Lect. | Teach. Fellow | All Ranks |
| Instruction | | | | | | | |
| Formal Classes | 10.98 | 12.06 | 11.52 | 13.12 | 12.33 | 15.18 | 12.46 |
| Supervision-Teaching | .86 | .82 | 1.06 | .67 | 1.91 | .03 | .73 |
| Supervision-Research | 2.50 | 2.33 | 1.69 | .74 | .52 | .05 | 1.52 |
| Other Instructional Activity* | 14.41 | 16.02 | 17.42 | 19.84 | 23.74 | 23.06 | 18.10 |
| Total Instruction | 28.75 | 31.23 | 31.69 | 34.37 | 38.50 | 38.32 | 32.81 |
| Administration | 9.32 | 6.06 | 5.24 | 2.16 | 3.48 | .32 | 5.08 |
| Research | 11.75 | 12.78 | 12.39 | 9.29 | 10.36 | .38 | 9.23 |
| Public Service | 3.52 | 2.53 | 1.52 | .54 | 1.17 | .27 | 1.88 |
| Total | 54.34 | 52.60 | 50.84 | 46.36 | 53.51 | 39.29 | 49.00 |

*Paper-Grading, Student Conferences, and Class Preparation.

## Teacher-Student Ratio

Another measure frequently used in consideration of the work load of the faculty member is the "teacher-student ratio." This ratio is obtained by dividing the number of full-time equivalent students by the number of full-time equivalent faculty.

The teacher-student ratio has been used -- and misused -- to arrive at a gross estimate for deciding whether the number of available teachers is adequate for a given student body. Judgment regarding the adequacy of the size of the teaching staff is then possible in theory, by a comparison of the actual ratio with a ratio that is considered "ideal."

Teacher-student ratios are said to operate with considerable success as yardsticks to learn whether the faculty of small undergraduate schools are the right size in relation to the enrollment. Teacher-student ratios cannot,

however, be used as effective guides in complex educational institutions, which have ten to twenty different schools and colleges. Obviously the same ratio is not applicable to instruction that begins at the freshman level, with students just out of high school, and continues through postdoctoral instruction, ten years or more after high school. The impression given by teacher-student ratios in these complex institutions is also unreliable because of the cross-traffic of students; some engineering students attend classes taught by liberal arts faculty members; liberal arts students receive instruction from education faculty members, and so on. Since some standard for defining a full-time student, regardless of the point of enrollment, must be developed to make the necessary calculations, it is suggested that fifteen semester hours be accepted as the equivalent of one undergraduate for one semester, twelve hours as the equivalent of one A.M. student for one semester, and eight hours as the equivalent of one Ph.D. student for one semester.

Therefore, to obtain the number of full-time equivalent students at the undergraduate level, the total number of semester credit hours taught to undergraduates is divided by 15 to obtain the number of "full-time equivalent" undergraduates in any one semester; the number of semester credit hours at the A.M., M.S., and Ph.D. levels is divided by the figures of 12 and 8 respectively, to obtain the number of A.M., M.S., and Ph.D. "full-time equivalent" students.

The teacher-student ratio for the entire university is actually meaningless as a measure of the adequacy of a given number of teachers in large institutions. It can be useful to illustrate an actual situation. But the proper number of teachers can only be arrived at by considering the needs of each department in relation to the student load which it serves, regardless of the department in which these students are registered. The overall ratio of teachers to students at a complex university may almost be regarded as an arithmetical accident. There should be no plan in a university to provide a comprehensive teacher-student ratio of 1:13, or one to any other number, and then work backward from this point to allocate the indicated number of teachers in each of the schools and colleges. The only suitable procedure is to analyze the circumstances peculiar to each department of the institution and then make fair and reasonable provision for the number of teachers needed. After the rosters are filled in every department, the teacher-student ratio can be readily computed. It should be emphasized, however, that the teacher-student ratio is simply a description of, rather than a control over, the number of faculty members employed.

To be more specific, during the junior and senior years of dental education it is necessary to provide a teacher-student ratio of 1:2 for 80 percent of the work of this period, namely, instruction in the dental clinic. In applied music one teacher meets privately with one student. In the advanced courses in architecture and design, semi-individual instruction must be carried on.

The first two years of instruction in the medical school can be operated effectively with a fairly large teacher-student ratio. During the last two years of medical training, however, the student is in supervised contact with patients, assisting the faculty member in making ward rounds, and engaging in other kinds of learning activities. Instruction of this type must be offered on a semi-individual basis. The Law School, on the other hand, can teach students in classes of one hundred or more with a high degree of success.

Table 4 shows how the actual teacher-student ratio in each of the schools and colleges of a university will vary.

Table 4

Teacher-Student Ratio

| School or College | Full-Time Equivalent Teaching Staff | Full-Time Equivalent Students Taught | Teacher-Student Ratio 1: |
|---|---|---|---|
| A | 59 | 667 | 11.3 |
| B | 61 | 944 | 15.4 |
| C | 54 | 412 | 7.6 |
| D | 45 | 1,354 | 30.1 |
| E | 244 | 2,713 | 11.1 |
| F | 40 | 963 | 24.1 |
| G | 779 | 14,547 | 18.7 |
| H | 211 | 1,622 | 7.7 |
| I | 69 | 701 | 10.2 |
| J | 20 | 169 | 8.5 |
| K | 48 | 271 | 5.6 |
| L | 8 | 75 | 9.4 |
| M | 33 | 325 | 9.8 |
| N | 13 | 226 | 17.4 |

Even within one specified school or college, say Architecture, the teacher-student ratio cannot be interpreted correctly without a further breakdown, since each program seeks to impart a different body of knowledge requiring different methods of teaching, and in each the academic level of the students will vary.

As an example, the College of Architecture and Design may provide four major degree programs: Art Education; Architecture; Interior Design; and Landscape Architecture. The overall teacher-student ratio of 1:11.3 indicated for College A in Table 4 is again only an average; Art Education can be taught effectively with a teacher-student ratio of 1:20. This ratio would be several times too large, however, for the semi-individual instruction required in the last two years of the program in Architecture.

Some years ago the North Central Association of Colleges and Secondary Schools offered the following rule of thumb to measure the adequacy of the teaching staff: One teacher should be provided for every twenty students in the freshman and sophomore years; one teacher for every fifteen students in the junior and senior years; and one teacher for every ten students in graduate school. These rough proportions might have been entirely satisfactory in the past for liberal arts and a few other fields. If they were adhered to rigidly in large institutions, however, the result would be a waste of resources in some areas, and ineffectual effort in others.

Another midwestern state university filed its request for a state appropriation for the coming year based on the following ratio of teachers to full-time equivalent students:

| | |
|---|---|
| Freshman and sophomore | 1:18 |
| Junior and senior | 1:12 |
| First-year graduate and graduate-professional | 1:9 |
| Advanced graduate and graduate-professional | 1:4 |

Questions regarding the size of the faculty and the work load of individual members also involve the proper distribution of those holding the ranks of instructor, assistant professor, associate professor, and professor. Again the needs of the department will vary, and no fixed rule can be established. In some departments much of the instruction is in the area of service courses, such as English, mathematics, and chemistry, which are elected by students in all the undergraduate schools and colleges as basic tools for work in science, social science, communications, and humanities. Since such service courses in these subjects are designed to provide elementary material for students possessing a wide range of competence, they can be well taught by junior members of the faculty as a rule. Most departments therefore reserve their full professors for classes where specialized research and experience can be used to better advantage.

To ensure a fair division of the work in each department, most institutions in the United States request faculty members to compile a record showing the time they spend in teaching duties, administrative assignments, research projects, and other work connected with their position. There are strong differences of opinion about these reports, and in some universities they may arouse controversy. The form on page 14 is typical of those used.

The contact hours each week reported by faculty members in one institution are shown in Table 5.

TO BE FILLED OUT AND RETURNED TO THE DEAN BY THE THIRD WEDNESDAY OF THE TERM

# FACULTY SERVICE RECORD

FIRST SEMESTER 19___
SECOND SEMESTER 19___
SUMMER SESSION 19___

1. NAME _____ TITLE _____ DEPARTMENT _____ SCHOOL OR COLLEGE _____
2. OFFICE: ROOM _____ BUILDING _____ UNIV. EXT. No. _____
3. CONSULTATION HOURS _____
4. If your teaching program is included, in part, on another report, please indicate the proper reference _____
5. If your teaching appointment is not full time, please indicate the fraction of full time, as defined in your appointment _____
6. Is your appointment for 12 months or for the academic year? ( ) 12 months ( ) academic year ( ) other _____
7. If you receive remuneration for any non-teaching position in the University, please name the position and the department _____

| Tab Use Only: 1–3 | 4–9 | 10–14 | 15–17 | 18 | 19–21 |
|---|---|---|---|---|---|

| Course Number | Section Number | Credit Hours | Type of Class Instruction | Hours of Week | Hours of Day | Room | Building | Average Hours Spent Weekly: Teaching | Average Hours Spent Weekly: Preparation Grading, etc. | Code (Leave Blank) | Enrollment: Undergraduate: Freshman | Sophomore | Junior | Senior | Special | Graduate: Master's Cand. | Graduate: Ph.D. or Other Post M.A. | Total | Tab Use Only: Credit Hours Apportionable | Tab Use Only: Duplicate Code | For School Use Only |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 22-24 | 25-27 | 28-29 | | | | | | 30-32 | 33-35 | 36 | 37-39 | 40-42 | 43-45 | 46-48 | 49-51 | 52-54 | 55-57 | | 61-64 | 65-66 | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

Indicate below by name other instructors or assistants who assist in each course or section. This space may be used to explain any entries above.

Please furnish information requested on other side

(Reverse side of Faculty Service Record)

## TOTAL FACULTY SERVICES

Tab Use Only
_____ 4-9
_____ 10-14
_____ 15-17
_____ 18
_____ 19-21
Average Number of Hours per Week

Estimated average number of hours per week spent on *all faculty services during the regular semester* (instruction and examination period) ..... _____

(An estimate of 70-75 hours per week represents an average of 10 or more hours per day seven days a week or 12 hours per day six days a week.)

*For the time included in the above total but not listed on the front of the form,* an estimate of how it is distributed among the following activities will be helpful. Exact data are impossible, but your best estimates will permit a useful summary of how the faculty allocates its time.

## I. INSTRUCTIONAL ACTIVITIES

A. Supervision of teaching ..... _____ 22-24

B. Supervision of student research not included on the face of the form. ... _____ 25-27

(Number of active doctoral committees: Chairman ___; Member only ___)

## II. ADMINISTRATIVE DUTIES

(Include all department, school, and University Administrative duties, assigned counselling duties, committees, and other activities not counted under I., III., and IV.) List these assignments below ..... _____ 28-30

## III. SCHOLARLY ACTIVITIES

(Include any research, scholarly, or creative activity for which you did not receive additional compensation. Include here any such activity which you do not consider direct preparation for classroom work). ..... _____ 31-33

## IV. PROFESSIONAL ACTIVITIES OUTSIDE THE UNIVERSITY

(Include such activities as: administrative activity for professional societies as an officer or on committees; consultation with research groups outside the University; consultation with civic groups. Exclude service for which you receive extra compensation ..... _____ 34-36

List these activities below:

Table 5

Contact Hours Per Week of Full-Time Teaching Staff, Fall Semester

| No. Hours | Professor | Assoc. Prof. | Asst. Prof. | Instructor | Total Faculty |
|---|---|---|---|---|---|
| 39 | - | - | 1 | 2 | 3 |
| 38 | - | - | - | - | - |
| 37 | 1 | - | - | 2 | 3 |
| 34 | - | - | 1 | 1 | 2 |
| 32 | - | 1 | 1 | 1 | 3 |
| 31 | - | 1 | 1 | 1 | 3 |
| 30 | 1 | - | - | - | 1 |
| 29 | 1 | 3 | - | - | 4 |
| 28 | 1 | 3 | - | - | 4 |
| 27 | 1 | 1 | - | - | 2 |
| 26 | 2 | 2 | - | 1 | 5 |
| 25 | 1 | 1 | 2 | 1 | 5 |
| 24 | 6 | - | 1 | 1 | 8 |
| 23 | 2 | 1 | 2 | 2 | 7 |
| 22 | 3 | 3 | - | - | 6 |
| 21 | 6 | 4 | 2 | 2 | 14 |
| 20 | 4 | 11 | 4 | - | 19 |
| 19 | 6 | 5 | 3 | - | 14 |
| 18 | 12 | 10 | 11 | 12 | 45 |
| 17 | 7 | 3 | 3 | 1 | 14 |
| 16 | 10 | 8 | 6 | 2 | 26 |
| 15 | 6 | 7 | 5 | 1 | 19 |
| 14 | 25 | 8 | 11 | 2 | 46 |
| 13 | 18 | 7 | 7 | 5 | 37 |
| 12 | 19 | 16 | 14 | 22 | 71 |
| 11 | 16 | 11 | 10 | 14 | 51 |
| 10 | 38 | 25 | 25 | 14 | 102 |
| 9 | 46 | 25 | 25 | 9 | 105 |
| 8 | 39 | 29 | 22 | 16 | 106 |
| 7 | 34 | 15 | 15 | 12 | 76 |
| 6 | 41 | 19 | 30 | 9 | 99 |
| 5 | 17 | 8 | 4 | 1 | 30 |
| 4 | 7 | 5 | 4 | 3 | 19 |
| 3 | 9 | 2 | 3 | - | 14 |
| 2 | 5 | - | - | - | 5 |
| 1 | 1 | 1 | - | - | 2 |
| 0 | 6 | 3 | 1 | 1 | 11 |
| Mean | 10.53 | 11.76 | 11.02 | 13.39 | 11.20 |
| Median | 9.00 | 10.00 | 10.00 | 11.00 | 10.00 |
| Mode | 9.00 | 8.00 | 6.00 | 12.00 | 8.00 |
| Range | 0-37 | 0-32 | 0-39 | 0-39 | 0-39 |

In Table 5, the reported time spent in instructional activities does not include time given to the direction of graduate students' research, direction of thesis preparation, individual instruction through honors courses, and the like. Consequently, the averages reported here may be quite different from those that would be reported in another institution in which these types of instruction are formally recorded as a part of the faculty work load.

The amount of time that is devoted to direct, formal classroom instruction in the large complex university is usually smaller than in other institutions. This is a well-recognized phenomenon. Surveys of higher education in many states have called attention to the fact that such large universities expect their faculty members to spend more time in research and other scholarly work than could be expected of them in other institutions.

## Class Size

The size of classes is another frequently used measure of teaching loads. Such measurements, however, usually result in averages which are again meaningless if they are based on an institution as a whole. As has been mentioned earlier, some classes must be on a 1:1 ratio, where instruction is individual, and others can enroll one hundred or more students. When this is so, averages are of no value either as measures of teaching loads or as a guide in distributing the work in a department. The reason some classes must be very small while others can be much larger lies in the type of instruction offered. Is it directed toward fact-gathering, or to the stimulation of thought, or is the instruction in the creative arts? What methods are best in these different situations? These questions should have more control over class size than the application of average figures to a department. Variations at one university can be seen in Table 6.

Table 6

Weighted Average Class Size
Fall Semester

| School or College | Fresh. Soph. | Junior Senior | Grad. M. A. | Grad. Ph.D. | All Levels |
|---|---|---|---|---|---|
| A | 24.05 | 19.19 | 4.80 | 3.20 | 15.44 |
| B | 31.00 | 29.72 | 18.68 | 6.89 | 23.83 |
| C | - | 12.92 | - | - | 12.92 |
| D | 34.26 | 83.77 | 10.25 | 10.29 | 32.61 |
| E | 35.64 | 26.20 | 12.52 | 3.58 | 15.33 |
| F | 21.20 | 15.44 | 13.79 | 1.72 | 11.28 |
| G | - | 19.76 | - | - | 19.76 |
| H | - | - | 29.31 | 10.87 | 28.71 |

Table 6 - Continued

| School or College | Fresh. Soph. | Junior Senior | Grad. M. A. | Grad. Ph.D. | All Levels |
|---|---|---|---|---|---|
| I | 30.16 | 27.60 | 8.27 | 3.98 | 21.51 |
| J | 16.31 | 6.41 | 10.60 | 4.44 | 8.90 |
| K | 45.00 | 15.82 | 7.72 | 1.48 | 7.22 |
| L | 21.54 | 10.19 | - | - | 12.45 |
| M | 13.71 | 11.83 | - | 1.30 | 5.74 |
| N | 30.32 | 14.00 | - | - | 20.28 |
| O | - | 22.53 | 13.08 | 1.41 | 7.65 |
| P | - | 35.50 | 3.58 | 6.89 | 3.79 |

---

Table 6 is an illustration, not a model. As indicated before, the thoughtless application of the averages for each of the schools and colleges would result in intellectual starvation in the classes of some departments and a double horm of plenty for others.

Another way of saying that averages tend to become meaningless is to show the actual class size in one institution during one fall semester. In that university:

1,315 classes had 10 or fewer students;
1,751 classes had between 11 and 20 students;
1,886 classes had between 21 and 35 students;
239 classes had between 36 and 50 students;
240 classes has between 51 and 100 students;
90 classes had between 101 and 200 students;
30 classes had between 201 and 300 students;
13 classes had more than 300 students.

In terms of academic administration even the figures given above are valueless as guides. The departmental faculty must be clearly convinced of the need for 1,315 classes with ten or fewer students and 1,751 classes with between eleven and twenty students.

It becomes important, therefore, to obtain explanations and interpretations from departments and teachers regarding class size. These reasons are clearly understood and readily communicated by the teachers. Direct and rational explanation of such information to institutional, state, and other budget officers when it is necessary to defend appropriation requests will do much to forestall, and even prevent, the suspicion that any class with fewer than fifteen students should be eliminated.

Effective administration does not require a minimum class size for all departments but allows each department to make appropriate decisions and defend them. It should, of course, be clear that the department which has

the authority to restrict the size of some classes also has the responsibility to increase the average size of others if that is the only way to meet the total instructional obligation with the available personnel.

The administration of a department on this basis becomes somewhat comparable to the management of one's household affairs. Probably most citizens of the United States have some luxuries, major or minor, which they cannot really afford with their level of income. They feel that these luxuries are so important that they are quite willing to reduce expenditures in other areas, perhaps giving up items which a neighboring family might regard as absolutely essential.

## Student Credit Hours Per F.T.E. Faculty

Another measurement of teaching load that has been frequently used is the student credit hours "produced" per faculty member. Theoretically, if a teacher engages in fifteen hours of classroom instruction each week, teaching a subject that can be presented effectively to a group of thirty students, his total or aggregate hours would be thirty students per class times fifteen hours, or 450 student teaching hours. This is a nice ideal situation in arithmetic. Unfortunately, in actual practice, it is almost impossible to guarantee that the optimum number will be present in each class. This measurement is therefore of little use in the advance planning of work loads.

The actual number of combined student credit hours calculated according to the above method for each full-time equivalent faculty member in the budget of one institution is presented in Table 7.

Table 7

Average Student Semester Credit Hours Taught by Each Full-Time Equivalent Faculty Member Fall Semester

| School or College | Number of Full-Time Equivalent Faculty (All Ranks) | Student Semester Credit Hours Per Full-Time Equivalent Faculty Member |
|---|---|---|
| A | 66.33 | 125.09 |
| B | 58.18 | 187.69 |
| C | 30.50 | 100.79 |
| D | 53.69 | 139.06 |
| E | 44.37 | 327.30 |
| F | 246.19 | 130.32 |
| G | 25.11 | 185.70 |
| H | 36.72 | 363.62 |
| I | 828.28 | 225.17 |
| J | 75.22 | 137.43 |

Table 7 - Continued

| School or College | Number of Full-Time Equivalent Faculty (All Ranks) | Student Semester Credit Hours Per Full-Time Equivalent Faculty Member |
|---|---|---|
| K | 21.90 | 98.59 |
| L | 41.22 | 110.33 |
| M | 7.53 | 114.34 |
| N | 38.30 | 79.16 |
| O | 33.70 | 110.97 |
| P | 13.12 | 212.81 |

The range of student semester credit hours "produced" as shown in Table 7 indicated that the administration of an institution in terms of an average for the entire university or for a specific college or school would provide a starvation diet in some and an oversupply in others. It cannot be emphasized too strongly that academic administration in respect to instructional loads can never be successful if it depends upon averages to define the proper number and distribution of faculty members, the size of classes, or the hours that each teacher should spend in formal class work.

Successful administrative procedures require study of the particular needs of each department by the department itself. After such a study, conducted under faculty or departmental control, each department should be allowed to judge the comparative values of small classes in one instance or large classes in another, or the relative advantages of adding a teacher, or a secretary, or perhaps a technician, each of which may make a much-needed contribution to the instructional activities of the department.

## Summary

All of these discussions of faculty work load, class size, semester credit hours produced by one F.T.E. faculty member, and teacher-student ratios lead to the most important question of adequate financial provision for each of the state-supported institutions in one state, giving appropriate recognition to the individual characteristics of each of the institutions.

One midwestern University President has offered the following statements to the Governor, which summarize much of our earlier discussion:

> I believe that we need a series of budgetary formulas which will capture the financial costs of education at different levels of instruction and in different types of programs. Budgetary guidelines should fully reflect such differences and costs; they should be known in advance and applied consistently throughout the budgetary process from beginning to end, including the legislative phase.
>
> Budgetary formulas should be based on specific, careful study of instructional needs for the different programs and levels of instruction. It is essential that the complexities not be sidestepped by rolling them up into an oversimplified student-faculty

ratio for a large institution which may have dozens of schools colleges, and teaching programs, each with its own necessities. I cannot emphasize too much the dangers of oversimplification. For example, both Law and Medicine are graduate professional curricula, yet everyone knows that a much higher investment of faculty time is required in Medicine. Similarly, a Ph.D. in Education simply cannot be compared with a Ph.D. in Chemistry or Engineering with respect to instructional, laboratory, clinical, and other needs.

If budgetary formulas are to be useful, they must take account of certain additional realities. First, the concept of 'instruction' cannot be limited to formal classroom teaching. At the higher levels of instruction, students are expected to exercise more autonomy and initiative in their academic work; the need for didactic instruction, or 'podium time,' diminishes, while the need for individual consultation, one-to-one discussions of the student's research, and other types of conseling is much greater. Second, a successful Ph.D. program simply cannot be operated without research-oriented faculty members who are actively contributing to their field of study and thus are qualified to stimulate and guide graduate students into research activity at the frontiers of their disciplines. Budgetary formulas applicable to an institution with a large concentration of graduate and professional programs must therefore make adequate allowance for research as an essential activity of the faculty. Third, the realities of the academic job market must be recognized, particularly the fact that faculty members qualified to conduct graduate and professional instruction will command higher salaries than those who are not thus qualified.

In a programmatic approach to budgeting, concepts of output must be incorporated. On this point I would urge that the student credit hour cannot be accepted as a sufficient or satisfactory measure of output under all circumstances. Experience in other states corroborates that study must be made of alternative or supplementary concepts.

A few limitations of the student credit hour as a sole index of output are as follows:

1) There is no necessary uniformity as between institutions, or even within an institution, in practices with respect to the assignment of student credit hours.

2) If, as I expect, there will be a revolution of instructional objectives and techniques in the future, the number of 'podium hours,' which has been historically the basis for assignment of credit hours, will become even less significant as a measure of what is accomplished in a course. It is also likely that there will be much greater variety in the programs of individual students. To achieve real progress, we shall probably have to break out of the mold in which every student is taking four or five hermetically sealed 'courses.' Such a development would also serve to undermine the validity of a credit hour as the principal measure of output.

Inasmuch as students attend colleges and universities for the purpose of acquiring knowledge and skills which culminate in the obtaining of a degree, it may well be that the degree is the most meaningful measure of output. We should consider, I believe, whether institutions of higher education should receive a budgetary allotment for each degree earned, taking account all elements and differentials of cost by type of program and instructional level, as discussed above. As you perhaps know, this approach has been adopted in certain states which are developing systems of program budgeting for higher education.

The Education Commission of the States is a nonprofit organization formed by the Compact for Education in June 1966. Forty-three states and territories are now members of the Compact, of which the unique goal is to further a working relationship among state governors, legislators and educators for the improvement of education.

Education Commission of the States
1860 Lincoln Street, Suite 822
Denver, Colorado 80203
Telephone: (303) 255-3631